

WHAT IS CLAIMED IS:

~~PATENT CLAIMS~~

Sub a<sup>12</sup> 1. Method for computer-supported error analysis of sensors and/or actuators in a technical system that is present in the form of a status-finite description that exhibits statuses of the technical system, using a computer.

a) whereby a status-finite description of the technical system is determined for the error case for an error of a sensor and/or of an actuator;

b) whereby a first set of achievable statuses is determined for the technical system;

c) whereby a second set of achievable statuses is determined for the error-effected technical system;

d) whereby a difference set is formed from the first set and the second set;

e) whereby result conditions are determined from the difference set, these meeting prescribable conditions.

Sub a<sup>12</sup> 2. Method according to claim 1, whereby method steps a) through f) are implemented for all possible errors of sensors and/or actuators that the technical system comprises.

Sub a<sup>12</sup> 3. Method according to claim 1 or 2, whereby failure probabilities are allocated to the sensors and/or actuators; and whereby the error analysis ensues taking the failure probabilities into consideration.

Sub a<sup>12</sup> 4. Method according to one of the claims 1 through 3, whereby method steps b) and c) ensues [sic] according to the method of model checking.

Sub a<sup>12</sup> 5. Method according to one of the claims 1 through 4, whereby a status-finite description of a process implemented by the technical system is taken into consideration in the method.

Sub a12/ 6. Method according to one of the claims 1 through 5, whereby the status-finite description is realized by a finite automat.

Sub a12/ 7. Method according to claim 6, whereby the status-finite is realized by a finite automat in the form of a binary decision diagram (BDD).

5 Sub a12/ 8. Employment of the method according to one of the claims 1 through 7 in rapid prototyping of the technical system.

Sub a12/ 9. Employment of the method according to one of the claims 1 through 7 in the framework of error diagnosis of the technical system.

10 Sub a12/ 10. Employment of the method according to one of the claims 1 through 7 for generating critical test cases for a commissioning and a system test of the technical system.

Sub a12/ 11. Employment of the method according to one of the claims 1 through 7 for preventive maintenance of the technical system.